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Treatment Manual

Certifying Facilities

Certification of Forced Hot Air and Vapor Heat Treatment Facilities

Contents

Introduction

Commercial facilities using FHA[1] or VH treatment are subject to certification by an APHIS Inspector on a yearly basis, usually at the beginning of the shipping season. Certification is given solely in conjunction with quarantine treatment requirements. However, certification may be refused because of safety deficiencies at the plant (for example--open motors with exposed gears; unprotected fan belts within 6 ft of the floor level; or for sanitary or phytosanitary reasons). Certification may also be refused if any required repairs or modifications to the quarantine zone have not been done.

Preliminary Performance Testing

If the facility has not previously been officially certified, the operator must conduct preliminary, unofficial performance tests on his own and APHIS, that his equipment is in good working order. By trial and error, the operator shall establish a tentative temperature set point for the FHA or VH chamber, such that the fruit center temperature will reach the treatment temperature within a reasonable period of time. The operator shall do at least one trial treatment, with sensors placed in various parts of the load, to determine where the coolest spots occur. (For purposes of this test, the load in the FHA or VH chamber must contain fruits, though not necessarily of export quality.) At the option of APHIS, the operator of the facility may be required to conduct a preliminary performance test at the beginning of each shipping

1 Forced hot air (FHA) is also referred to as high-temperature forced air (HTFA).

season. The resulting data are submitted to APHIS with written comments, as evidence that the FHA or VH chamber is ready for its official performance test.

Procedures for Conducting the Official Performance Test for Certification

The official performance test has three basic steps: (1) calibrating the portable sensors; (2) calibrating the permanent sensors installed in the FHA or VH chamber; and (3) conducting an actual test treatment. These three steps are discussed below, in detail.

Calibrating the portable sensors

Using a factory-calibrated, certified glass-mercury thermometer (readable in tenths of a degree) as the standard, compare the reading from each portable sensor to the standard, and record any deviation. To facilitate this process, a specially designed portable sensor calibration device) preferably a swirling hot water bath) should be used. Calibration should be done at or near the required treatment temperature (not in an ice-water bath.)

Identify which sensor with a unique number or letter, and record the correction factor for each one. Any sensor that deviates by more than plus or minus 0.5° F (0.3° C) from the standard shall not be used.

If cordless sensors are used, these are already factory-calibrated, and require no further calibration by the user.

The number of portable sensors required during the test shall be at least one half (1/2) of the number of permanent sensors required to be installed in the chamber.

It is also permissible to substitute additional permanent sensors for portable sensors, provided that the temperature recorder is capable of monitoring them.

Calibrating the permanent sensors installed in the chamber

Calibrate the permanent sensors in the same manner as for the calibrating the portable sensors. A portable sensor (with a “zero” correction factor) may be used instead of the certified glass thermometer as the standard against which the permanent sensors are compared. Permanent and portable sensors must both pass the same high standard of accuracy.

Conducting an actual test treatment

To prepare for the test treatment, the APHIS Inspector shall insert the numbered portable and permanent sensors into fruits. Portable sensors may be placed anywhere in the load, with attention given to sites where the coolest spots are most likely to occur.

NOTICE

Portable and permanent sensors shall not be placed in the same fruits, but may be in the same trays.

- Draw a three-dimensional diagram showing where each numbered sensor has been placed. Have the operator place the fruit into the FHA or VH chamber, close the door, turn on the heat generator, and start the automatic temperature recorder.
- Take readings on the portable sensors at least once every 5 minutes.
- Note how many minutes it took for the warm-up period to be completed.
- Run the "dwell time" portion of the treatment, and hold it for the minimum amount of time required by the particular treatment schedule.
- Review all temperature records from the portable as well as permanent sensors. If the treatment was successful, the attending APHIS Inspector shall initial the chart. Remove all sensors. Allow the operator to move the fruit to the quarantine zone, where it can be cooled (optional), sorted, and boxed.

One successful test is required, for certification or recertification. When all requirements have been met, APHIS will issue a Certificate of Approval (PPQ form 482 or equivalent).

Frequency of performance testing

A new performance test shall be required (1) at least once a year (usually at the beginning of the shipping season), and (2) whenever the FHA or VH chamber has been out of service for 10 days or more.

NOTICE

Additional performance tests are not required for each type or size of fruit, nor when the operator wishes to vary the delivery air temperature, blower speed, or column height. This is because a successful treatment is based solely upon pulp temperature.

In addition the FHA or VH chamber's permanent sensors shall be recalibrated daily (on days when the chamber is in use) and whenever sensors are replaced.